



Assessing the Input

Teacher speech in a Kaqchikel immersion school

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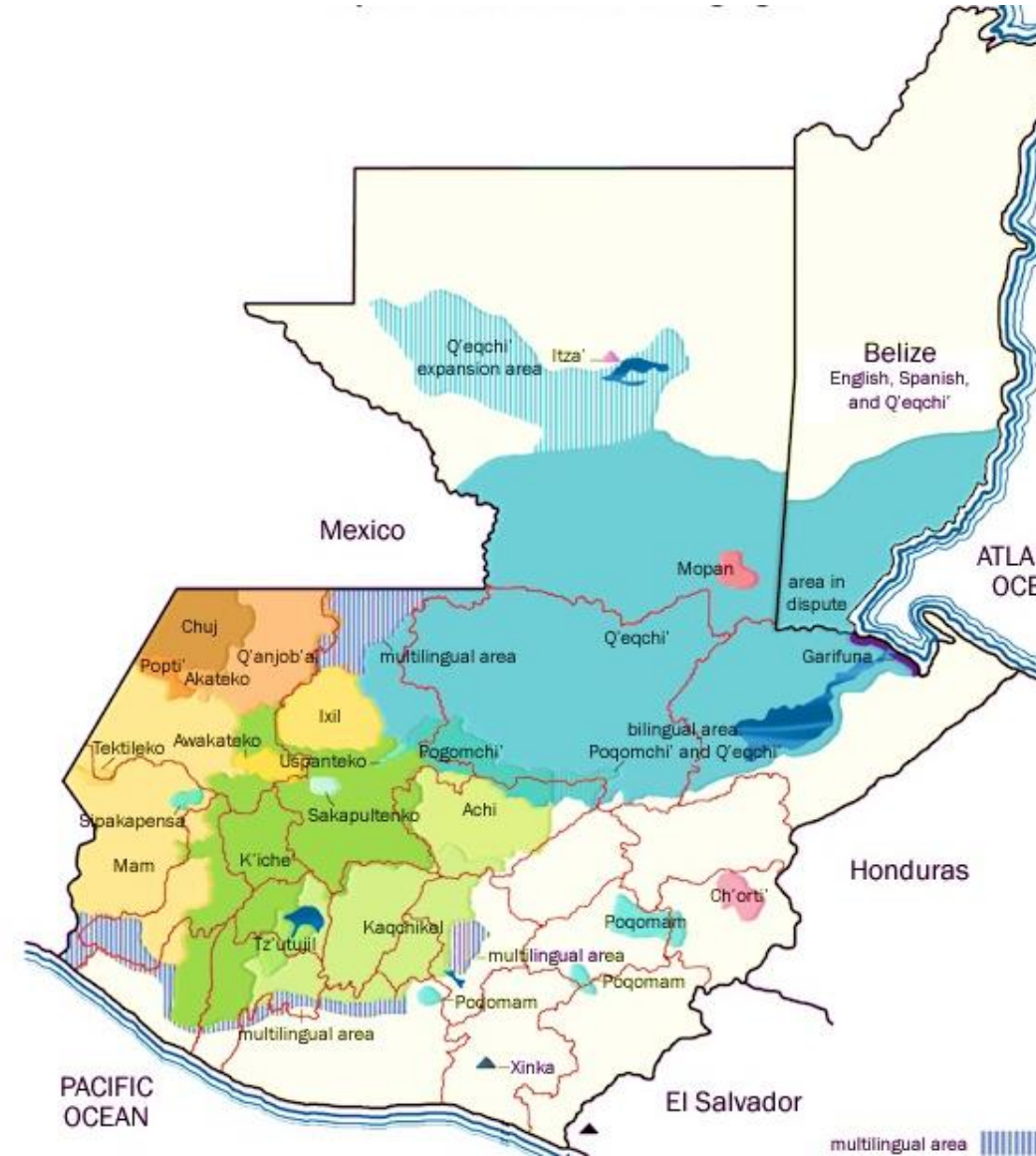
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Nimaläj Kaqchikel Amaq'

LANGUAGE BACKGROUND

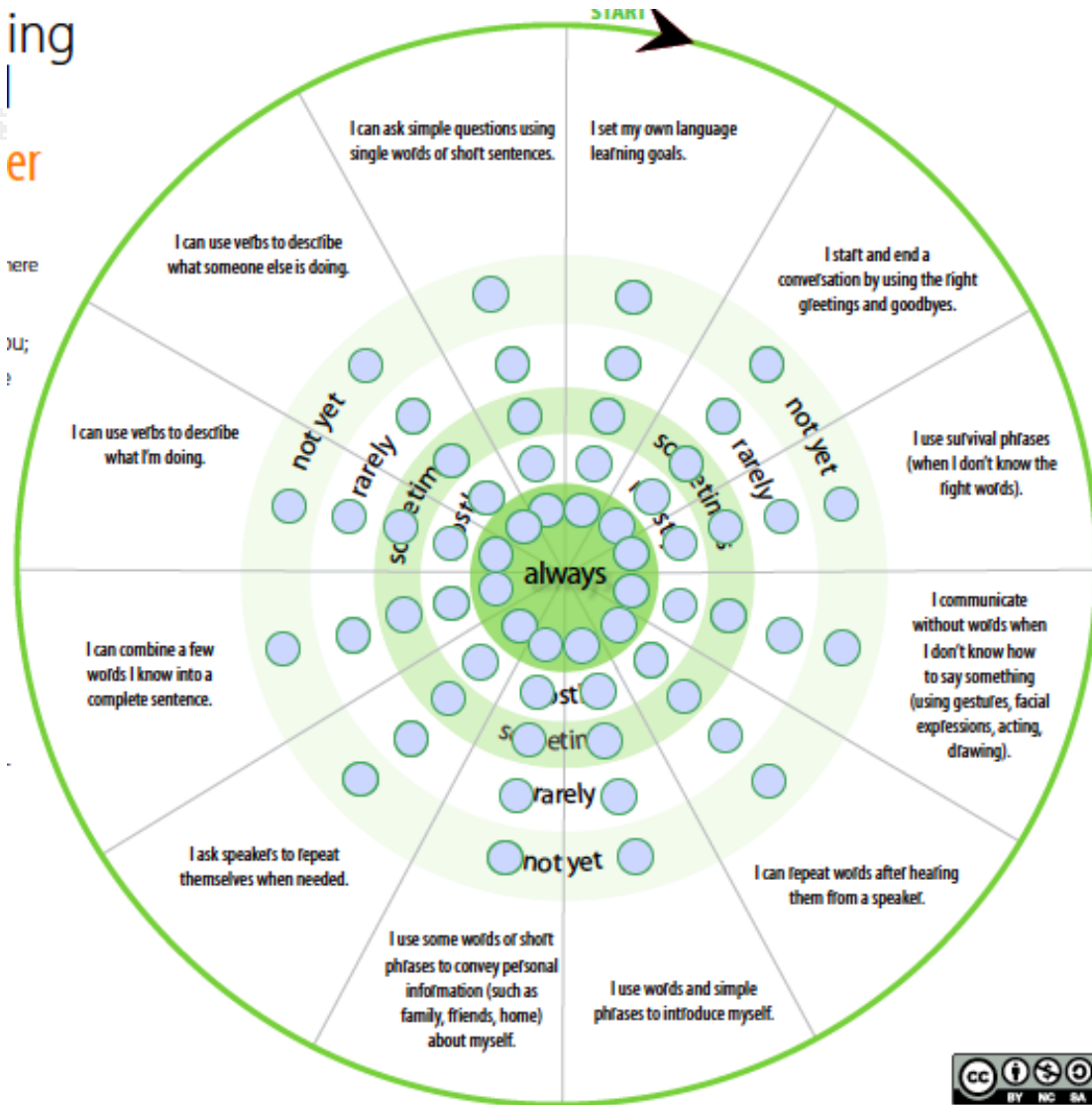
- Kaqchikel (cak), Mayan
 - ~200,000 speakers
 - Despite decades of support, number of speakers of Mayan languages continues to decrease
 - **What is being done is not sufficient to restore intergenerational transmission**



STATE OF THE FIELD

- Language acquisition research has shown that in both first and second language acquisition, what children are able to acquire is limited by the **quality** and **quantity** of the input (e.g., Gathercole and Thomas 2009, Hoff 2006, Lareau 2003, Paradis 2011, Place and Hoff 2011, Unsworth 2016, *inter alia*).
 - **Quantity:** How much are they hearing? (words/sentences per amount of time)
 - Target: ~**25-30%** of total input (Pearson et al. 1997, p. 56; Genesee 2007, Baker 2014:38)
 - **Quality:**
 - exposure to a diverse and rich set of vocabulary items,
 - encounter utterances of increasing length and sophistication,
 - hear narratives and stories,
 - frequent opportunities for one-on-one conversations (Hoff 2003; Huttenlocher et al. 2002, 2010; Rowe 2012; Ramírez-Esparza et al. 2014)

- Post popular language assessment tools are holistic (e.g. ACTFL, LLAT) and generalized
- Growing literature on linguistically-informed ways to assess success in language revitalization (Housman et al. 2011, Morgan 2017, O'Grady and Hattori 2016, Peter et al. 2003, Peter 2007, Peter et al. 2008)
 - Generate language-specific acquisition benchmarks
 - Figure out what is necessary (quality and quantity) to acquire indigenous languages



EXAMPLE: CHEROKEE C-KILA BENCHMARKS

PRESCHOOL: Evidence of 1st Person: "Me" in accurate, complete phrases

PRE-K: Evidence of accuracy in 1st Person Singular "g/G", with common verbs; growing consistency

KINDERGARTEN: Evidence of use of some accurate and appropriate 2nd and 3rd singular verbs

FIRST GRADE: Mastery of 1st, 2nd, and 3rd person singular forms of common verbs; some evidence of accurate use of plural verbs

SECOND GRADE: Mastery of many plural forms, maybe not to the degree of distinguishing between dual/plural

THIRD GRADE: Evidence of all person markings for present continuous tense, singular, dual, and plural; evidence of some distinction between inclusive/exclusive

AT ALL LEVELS: AGE APPROPRIATE,
CONSTANT AND PLANNED EXPOSURE TO ALL
VERB FORMS!!!

Peter, Sly, and
Hirata-Edds 2008

COMPARATIVE LANGUAGE INPUT PROJECT (CLIP)

- Ongoing collaboration between the Smithsonian Institution, the University of Hawai'i at Mānoa, and indigenous communities which aims to determine how much input is needed to support language revitalization in the creation of native (L1) speakers. (PI: William O'Grady)
1. Develop metrics that are roughly comparable cross-linguistically for talking about features relevant to measuring input
 2. Create benchmarks for endangered language acquisition using participating programs as models
 3. **Develop an easy, cheap method that any program can use (over and over again!) internally to assess progress**
 4. **Help participating programs by generating specific feedback**

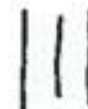
NIMALÄJ KAQCHIKEL AMAQ' (NKA)

- Long-term collaboration (2011-present)
 - 83 students, Chimaltenango
 - Ages 3-10, preschool through 4th grade
 - Kaqchikel partial immersion
 - ~ 2 hours/day (of ~ 4) in 2016
 - Math, Kaqchikel language, art, computers, gym



PREVIOUS RESEARCH

- Production and comprehension assessments in 2014 (Heaton and Xoyón 2016)
- Findings:
 - After 2 years, just starting to get a command of basic intransitive verb morphology
 - Difficulty with Mayan-specific “positional” verb class
 - Difficulty with basic sound contrasts, particularly ejectives/implosives



NEXT STEPS

- How does the quality and quantity of the input at NKA contribute to the observed production/comprehension results?
- What can we do input-wise to improve student performance?



CLIP METHOD

- Teacher was given an audio recorder and microphone to wear during the entire school day
- Recorded for a representative two-week period
- Recordings were then transcribed and time-aligned using ELAN by a Maya linguist (Juan Ajsivinac Sian) and tagged for basic structural elements (nouns, verbs)
 - Only transcribed teacher speech in Kaqchikel
- Run counts/stats using ELAN
- Hold a workshop to discuss the findings

ADDITIONAL PLANNING

- To make the most of the process, we wanted to look for more Kaqchikel-specific things
 - Transitive vs. intransitive usage
 - Verb types: imperative, positional, agent focus/antipassive
- Reflects ideological orientation and goals of the program: want to emphasize Mayan language features, eschew Spanish influence, teach standard Kaqchikel
- **Keep in mind:** recordings are basically just documentation; the same recordings could be used for anything in the future

FINDINGS

- **Input quantity:**
 - **44** hours of recording (4+ hours/day)
 - Children only get Kaqchikel input at school, so 4 hours/day = **33%** of their waking hours
 - Total transcribed Kaqchikel speech time was **3** hours, or **7%** of total recording time
 - → Need significantly more input to reach 25% general quantity threshold

FINDINGS

- **Input quantity/quality:**
 - **21,193** words (482 words/hour)
 - **1,214** unique words
 - **482** unique roots
 - **8,474** utterances (193 utterances/hour)
 - Average utterance duration: **1.3 seconds**



FINDINGS

- **Input quality:** type/token analysis
 - Limited variety:
 - **12** verbs made up 53% of total verb input
 - Commands made up **50%** of verb input
 - **80%** of verbs were second person

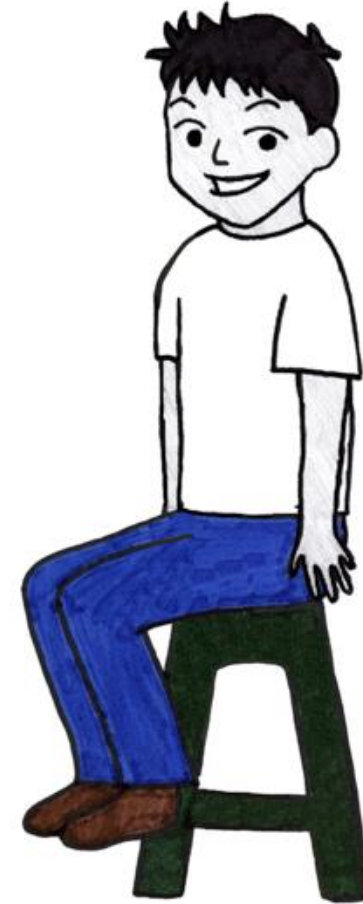
FINDINGS

- **General measures:**
 - Roughly equal number of nouns and verbs (4,847 vs. 4,315)
 - Roughly equal number of transitive and intransitive verbs (2,080 vs. 2,235)
 - **Mirrors what we find in adult Kaqchikel corpus data**



FINDINGS

- **Language-specific information:**
 - Total positionals: 647
 - intransitive positionals: 575
 - inchoative positionals: 61
 - stative positionals: 8
 - transitive positionals: 3
 - **2 verbs composed 85% of positionals**
 - **→ 96% of all positional verbs were imperatives (intransitive)**



FINDINGS

- **Language-specific information:**

- Syntactic ergativity
 - Total opportunities for focus verbs: **27**
 - Total focus verbs: **2**

Achike **x-Ø-tij-o(n)** ri kab'?
who **ASP-3SG.ABS-eat-AF** the sweet
'Who ate the sweet?'

*Achike **x-u-tij** ri kab'?
who **ASP-3SG.ABS-3SG.ERG-eat** the sweet
Intended: 'Who ate the sweet?'

FINDINGS

- Language-specific information:
 - Other unexpected things:
 - Use of manäq 'no' vs. man 'NEG'
 - Sporadic substitution of /r/ for /ɹ/, /ʒ/ for /j/
 - Dropping locative trace *wi*



DISCUSSION

- Asymmetries in the input explain observed production/comprehension results
- New information about how much input the children are hearing, and what specifically they are and aren't being exposed to
- Plenty of suggestion that classroom input is ultimately insufficient because it doesn't model normal input (e.g. Hinton 2001:7, Hornberger 2008)
 - Some things are inevitable, but others we can get creative and change

APPLICATIONS AND PROGRESS

- Presentation and discussion of findings with teachers in 2016
 - Mini grammar workshop
 - Different teaching methodologies
- Major developments:
 - Increased Kaqchikel-medium instruction from 2 hours/day to 3-3.5 hours/day
 - Expanded to go all the way through 8th grade



APPLICATIONS AND PROGRESS

- Now teaching reading and writing in Kaqchikel, and have 100+ books they have written
- Regularly video-record teachers
- Working on involving the parents

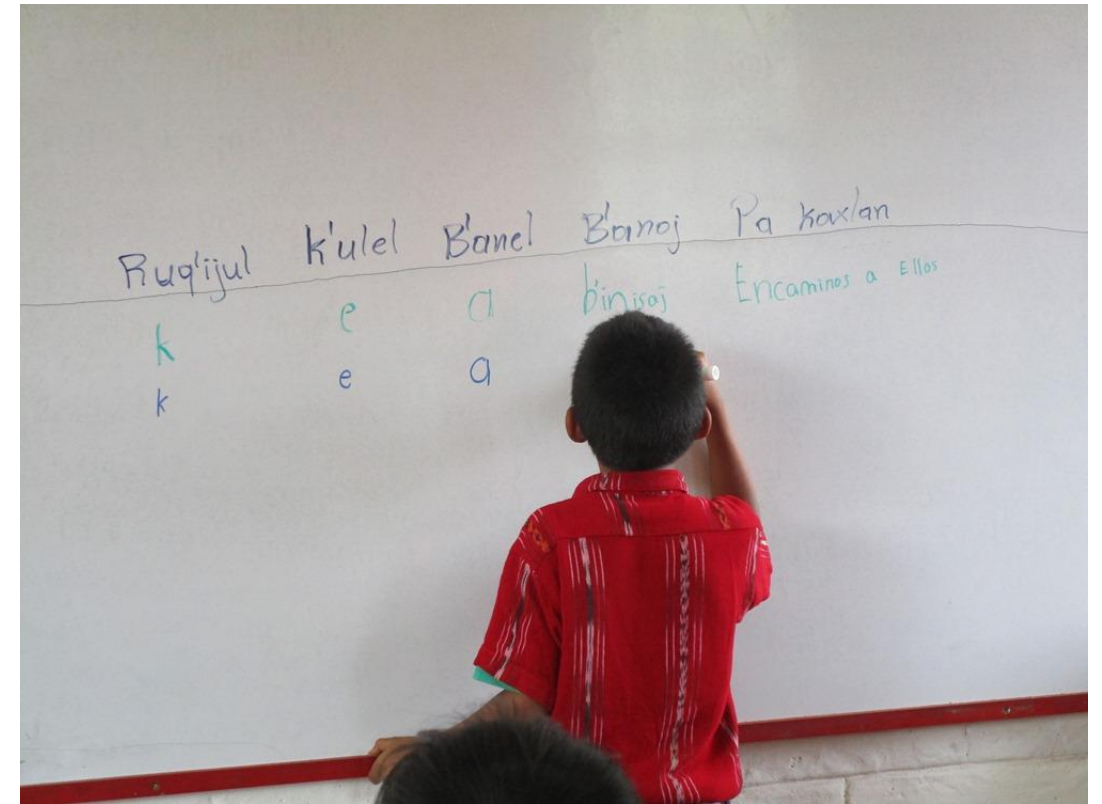


THOUGHTS ON FUNDING AND REPLICABILITY

- Only money in the project was for the transcriber
- BUT you can get information on quantity just by making time divisions (much faster)
- Application of automatic transcription methods, recognizers, etc. presented at this conference could make the process much faster/easier, particularly once you've done it once (use to train the model)

SUMMARY

- Assessment is a necessary component of successful language revitalization
 - Linguistically-informed assessment provides different information than holistic assessment
- Attention to the role of input in language acquisition



Janila matyöx chiwe!

- Igor Xoyón
- Marvin Nelson López Ramírez and the other teachers at NKA
- William O'Grady and the CLIP team
- The University of Hawai'i



SELECTED REFERENCES

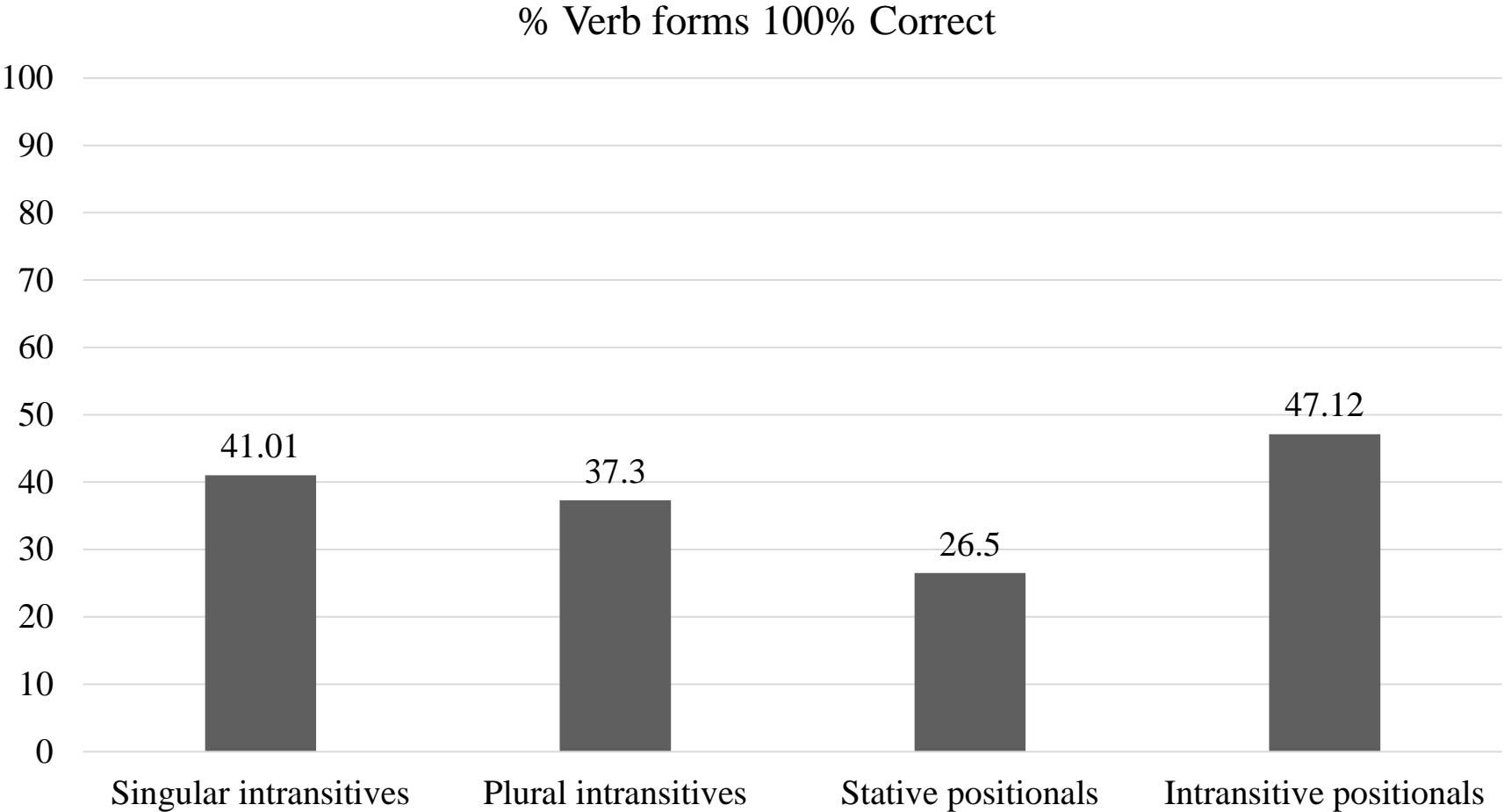
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ADVICE FROM NKA

- Video record teachers
- Start with a proven method
- Be willing to make changes
- Language needs to be fun!



PRODUCTION RESULTS



COMPREHENSION RESULTS

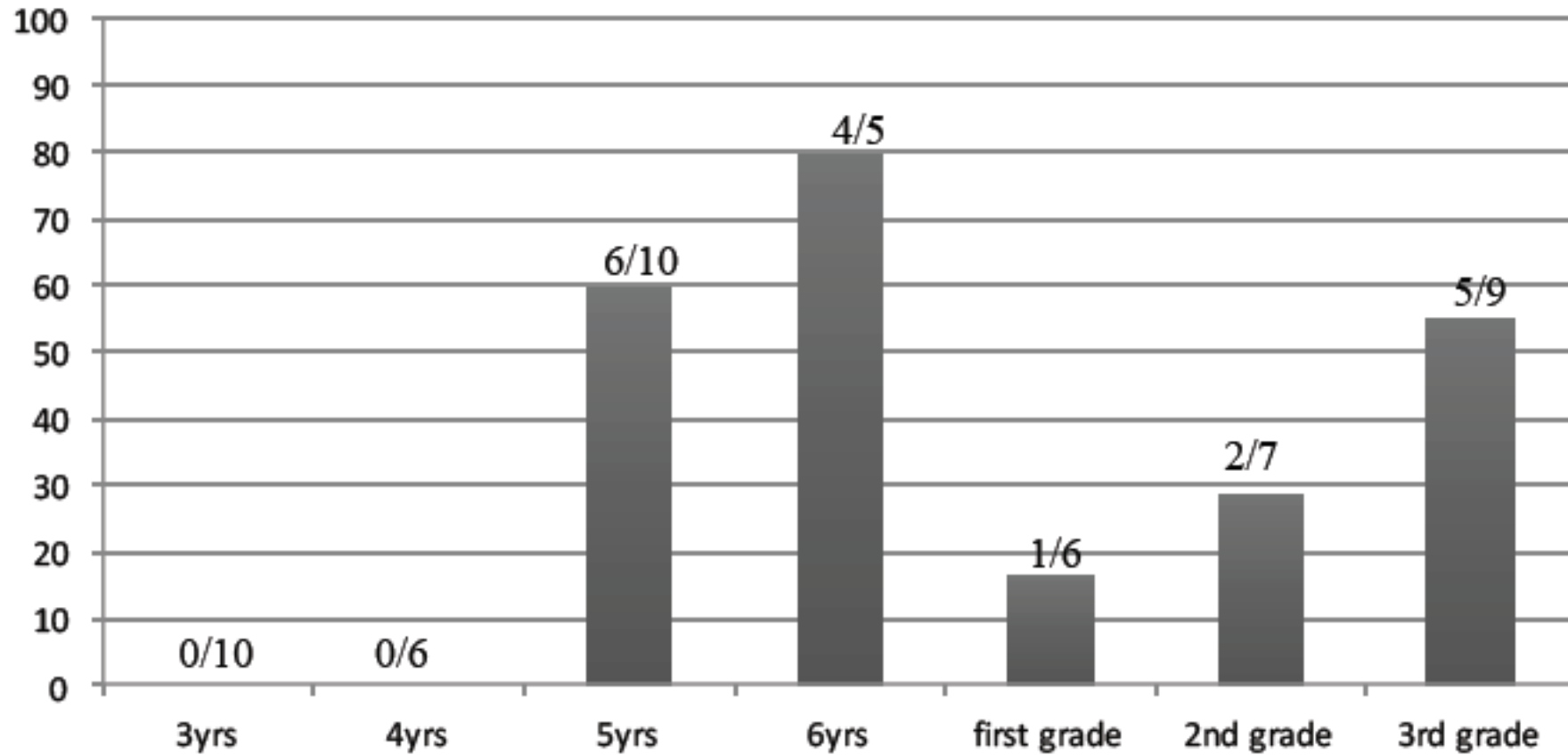


Figure 8. Number of students with an overall score above chance by age group